

**APPENDIX A**  
**"Clean" Version of Each Paragraph/Section/Claim**  
**37 C.F.R. § 1.121(b)(ii) and (c)(i)**

**SPECIFICATION:**

**Replacement for the paragraph beginning at page 6, line 16:**

B1  
Figure 1 illustrates a physical architecture which is comprised as a clique of arbitrators 10, 12, 14, 16 with each arbitrator having a market distributor (18) connected to it and one or more bank nodes (20) connected to that market distributor. Further market distributors may be connected in between the market distributor and the bank node as shown in branch 22. Thus, except for the arbitrator clique, the network graph is a tree and the bank nodes are always leaves; that is they are only connected to one other network node. The number of market distributors on a path from the bank node to the nearest potential arbitrator is unlimited, for example, it may be 0, not shown, 1, as shown in branches 24, 26 and 28 or more as shown in branch 22. In branch 30 the path between bank node 20 and arbitrator 14 has a single market distributor whereas the path between bank node 20b and the arbitrator 14 has two market distributors.

B2  
**Replacement for the paragraph beginning at page 7, line 5:**

Attached to each of the bank nodes is one more order input devices such as a trader terminal 32, two of which are shown in the figures. It is to be understood that any form of order input is possible and includes buy/sell orders or other trading orders input manually by traders or according to pre-defined conditions set by traders such as a buy/sell order that is input automatically once the market reaches a certain condition. Alternatively, the order input device could be fully automated.

B3  
**Replacement for the paragraph beginning at page 7, line 14:**

The arbitrators perform the same function as in the prior art EBS system WO93/15467 referred to earlier, that is they are responsible for price matching and deal execution. As an alternative, broking nodes (Fig. 2) could be used for this purpose. A broking node combines the functionality of price matching, deal execution and market distribution. The use of a broking node is intended to mimic the functionality of a human broker, and is more flexible than the arrangement of arbitrators and market distributors in the present system. It is also less

B3 hierarchical. By definition each broking node has an equal status in the network which increases flexibility. Broking nodes are also easier to maintain partly because they may be implemented using a single physical computer.

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B4 **Replacement for the paragraph beginning at page 7, line 27:**

At any given time there is only one arbitrator of the clique that is active. This arbitrator performs the function of matching bids and offers input into the system and executing deals. The active arbitrator shown in the figure is arbitrator 10. While this arbitrator is active, the remaining three passive arbitrators 12, 14, 16 perform as market distributors, passing price information input to the arbitrators down the branches to the bank nodes from where it is distributed to trader terminals on a trader floor which are connected to that bank node. An example of the trader terminals 32 is shown at branch 30 connected to bank node 20b. It will be appreciated that if broking nodes are used instead of arbitrators, the market distributors functionality forms a part of the functionality of the broking node. However, if arbitrators are used with the functionality described in WO93/15467, additional market distribution functionality is required. The market distributors described in WO93/15467 provide suitable functionality.

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B5 **Replacement for the paragraph beginning at page 8, line 12:**

An example of the system using broking nodes 22, 24, 26, 28 is shown in figure 2. In both figures 1 and 2 it should be understood that the additional market distributors 18 may be omitted as market distribution functionality can be provided solely from the matching engines.

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B6 **Replacement for the paragraph beginning at page 8, line 17:**

As shown in figures 1 and 2, each of the arbitrators or broking nodes in the clique are linked to all the others. The links between passive arbitrators are not used. Thus, in figure 2, the links between arbitrators 12 and 16, 12 and 14 and 14 and 16 are not used. As soon as a different arbitrator becomes active, some of the previously passive links are used. For example, when arbitrator 12 becomes active, the links between arbitrator 12 and the other arbitrators 10, 16 and 14 become active.

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B7

**Replacement for the paragraph beginning at page 9, line 12:**

The arbitrators, broking nodes and market distributors may have bank nodes connected directly to them. In this case the market distributor or arbitrators are responsible for preparing the market view for the branch node. In doing this the market distributor or arbitrator will not pass to the bank node any prices which are not dealable (i.e., prices contributed by a counterparty with which the bank does not have credit). This assumes that the arbitrator has the necessary credit information. If credit information is stored elsewhere, such as at a bank node, then the bank node must prepare the market view for the trader terminals and the credit information must be stored in such a way as not to be accessible by the trader terminals. The process of preparing market views is described fully in WO93/15467, the contents of which are incorporated herein by reference.

B8

**Replacement for the paragraph beginning at page 9, line 27:**

When a trader inputs a new quote into a trader terminal, the quote is submitted directly to the active arbitrator. The quote may automatically be sent to the closest market distributor who will use it to generate a market view for the bank and then send the quote to the active arbitrator. Thus, referring to figure 1, a quote is submitted by trader terminal 22a and is passed transparently up branch 30 to arbitrator 10. Alternatively, the quote is passed first to market distributor 18a which updates the bank market view and then passes the quote to active arbitrator 10. The updated market view is passed down to the bank node 20b.

B9

**Replacement for the paragraph beginning at page 10, line 23:**

In practice, it is possible that some participating banks may agree to have their credit information stored at the arbitrators and some may not. Banks are often reluctant for sensitive credit information to be stored off site. In that case, the procedures for credit checking will be a hybrid of that described below.

B10

**Replacement for the paragraph beginning at page 10, line 29:**

Although the system is anonymous, the arbitrator will have the identity of the quote owner. If that party has its credit limits stored centrally it can check credit centrally, at least for

B10

the quote owner. If the counterparty does not have its credit limits stored at the arbitrator it will have to perform credit checking at the relevant bank node.

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B11

**Replacement for the paragraph beginning at page 11, line 12:**

The embodiments of the invention described utilizes a single active arbitrator/broking node from the clique of arbitrators/broking nodes 10, 12, 14, 16, 32, 34, 36 and 38. In the following discussion, references to the active arbitrator include the active broking node as it is the arbitrator functionality in the broking node which is active. The active arbitrator is switched such that the geographical location of the active arbitrator corresponds to the market which is most active. Thus, in the example of the figure, one of the four arbitrators will be located in London, one in New York, one in Tokyo and the fourth will be a back up. The back up will only be active if one of the other three fails whereas the other three will rotate the position of active arbitrator throughout each day as each regional market opens and closes. Switching between arbitrators to activate a fresh arbitrator as the active arbitrator could be manual, or, for example, time based such that when a given market opens, the arbitrator local to that market becomes the local arbitrator. It is preferred, however, to switch arbitrators on the basis of network volume. The active arbitrator constantly monitors the number of new quotes and hits originating from all the sub-trees belonging to the different passive arbitrators and compares them with the number of new quotes and hits originating in the active arbitrator. Based on this information the system can determine when to switch to a different arbitrator and also which the next active arbitrator should be. One possible condition would be to switch arbitrators if the number of quotes and hits at the active arbitrator over a period of time, say two minutes, is exceeded by the number of quotes and hits at another passive arbitrator over the same time period then that passive arbitrator becomes the active arbitrator.

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B12

**Replacement for the paragraph beginning at page 12, line 17:**

When the active arbitrator switch is made, the former active arbitrator will first send a message to the new active arbitrator informing it that there is to be a switch and that it is the new active arbitrator. The former active arbitrator then stops initiating any new deals although partly completed deals are unaffected and will be completed by the former active arbitrator. However,

B12

if one of these pending deals fails, it does not perform any rematch; a process in which the arbitrator looks for another quote to match with the quoting party. Instead, the former active arbitrator sends all the deal data to the new active arbitrator which performs the rematch.

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B13

**Replacement for the paragraph beginning at page 13, line 3:**

The new active arbitrator will first activate, or establish if they do not already exist, connections with all passive arbitrators and then broadcast the new active arbitrator location over the whole of the network. This ensures that all quotes and hit messages sent in the future are directed to the new active arbitrator. The messages sent will contain the sequence number of the last market update message that was sent by the former active arbitrator. The arbitrator then starts to act as an active arbitrator. At the moment that the switch message is received, the book of the new active arbitrator is identical to that of the former active arbitrator at the moment the latter ceased to perform matching. This ensures that the switch is transparent and, for example, that rematch can occur in the new arbitrator if a deal has failed in the previous arbitrator. It also ensures that only one arbitrator will initiate each potential deal avoiding the possibility of the new active arbitrator trying to initiate a deal that was initiated by the previous active arbitrator.

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B14

**Replacement for the paragraph beginning at page 13, line 22:**

When remaining passive arbitrators receive the arbitrator switch message, they will compare the sequence number in the switch message and the sequence number of the last market update message. If, as a result of the comparison, the passive arbitrator decides that it has not yet received all the market update messages it will wait until the missing messages are received from the former active arbitrator before processing market update messages from the new active arbitrator. This scenario could arise, for example, if the one of the passive arbitrators is nearer the new active arbitrator than the old active arbitrator. Messages from the new active arbitrator could arrive before earlier messages from the old active arbitrator.

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B15

**Replacement for the paragraph beginning at page 14, line 5:**

It will be appreciated from the foregoing that whichever of the figure 1 or figure 2 embodiments is used, the market distribution functionality of or associated with each broker

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node or arbitrator remains active at all times. It is only the deal matching and execution functionality which is switched.

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B16

**Replacement for the paragraph beginning at page 14, line 11:**

One possible difficulty with the system discussed above is the need to pass the trading book from one node to another as responsibility shifts. This will take time. In an alternative embodiment, more than one, but not all, of the arbitrators are active at any one time. It is preferred in this embodiment that two arbitrators are active at any one time. In a still further embodiment, more than one arbitrator, but not all the arbitrators, are active for some but not all of the time. When the present active arbitrator signals that responsibility is to pass to another arbitrator the old and new arbitrators both become active for a set period of time. This enables the trading book to be transferred without any loss of matching and deal execution capacity.

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B17

**Replacement for the paragraph beginning at page 14, line 26:**

The system described has the advantages of retaining a central matching functionality, as used in the Reuters System described earlier while retaining the advantages of having arbitrators in different locations as used in the EBS System described earlier. The system provides, in essence, a variable location host system. In addition, all matching and deal execution is performed in one place at any one time but the location of deal matching and deal execution changes over time depending on market activity. This reduces the distance between most of the market participators and the matching engine ensuring that the system reacts faster and is easier for traders to use.

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